

Warm-up!
Solve for x.

1. $2x + 5 + 3x = 35$

2. $6x + 3 - 4x + 12 = 19$

3. $8x + 25 + 10x + 2x + 15 = 180$

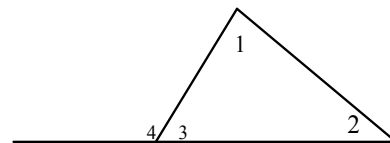
$$\begin{aligned} 1. \quad 2x + 5 + 3x &= 35 \\ 5x + 5 &= 35 \\ 5x &= 30 \\ x &= 6 \end{aligned}$$

$$\begin{aligned} 2. \quad 6x + 3 - 4x + 12 &= 19 \\ 2x + 15 &= 19 \\ 2x &= 4 \\ x &= 2 \end{aligned}$$

$$\begin{aligned} 3. \quad 8x + 25 + 10x + 2x + 15 &= 180 \\ 20x + 40 &= 180 \\ 20x &= 140 \\ x &= 7 \end{aligned}$$

4.2 Angle Measures of a Triangle

Cabri or GSP



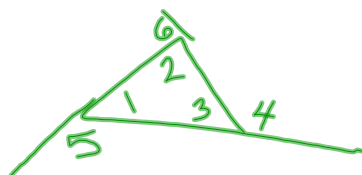
$$\begin{aligned} m\angle 1 + m\angle 2 + m\angle 3 &= 180 \\ (m\angle 3 + m\angle 4) &= 180 \\ m\angle 1 + m\angle 2 + m\angle 3 &= m\angle 3 + m\angle 4 \\ m\angle 1 + m\angle 2 &= m\angle 4 \end{aligned}$$

Theorem 4.1--Triangle Sum Theorem--The sum of the measures of the angles of a triangle is 180

$$m\angle 1 + m\angle 2 + m\angle 3 = 180$$

Theorem 4.2--The exterior Angle Theorem--The measure of an exterior angle of a triangle is = to the sum of the measures of the 2 nonadjacent interior angles.

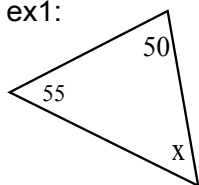
$$m\angle 4 = m\angle 1 + m\angle 2$$



$$\begin{aligned} m\angle 5 &= m\angle 2 + m\angle 3 \\ m\angle 6 &= m\angle 1 + m\angle 3 \\ m\angle 4 &= m\angle 1 + m\angle 2 \end{aligned}$$

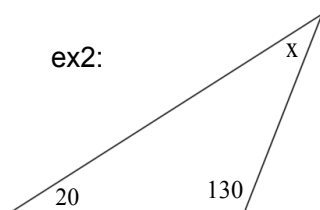
Examples

ex1:



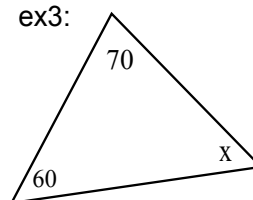
$$\begin{aligned} x + 55 + 50 &= 180 \\ x + 105 &= 180 \\ \boxed{x = 75} \end{aligned}$$

ex2:



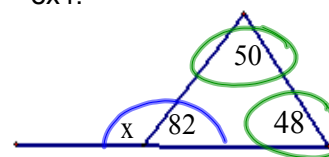
$$\begin{aligned} x + 20 + 130 &= 180 \\ x + 150 &= 180 \\ x &= 30 \end{aligned}$$

ex3:

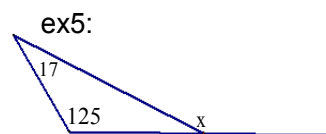


$$\begin{aligned} x + 60 + 70 &= 180 \\ x + 130 &= 180 \\ \boxed{x = 50} \end{aligned}$$

ex4:

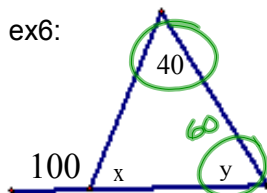


$$\begin{aligned} x &= 50 + 48 \\ \boxed{x = 98} \\ \text{Alternate method: } x + 82 &= 180 \\ x &= 98 \end{aligned}$$



$$x = 125 + 17$$

$$x = 142$$

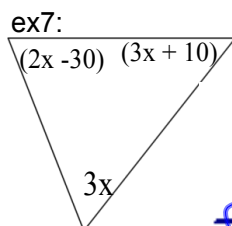


$$100 = y + 40$$

$$60 = y$$

$$x + 100 = 180$$

$$x = 80$$



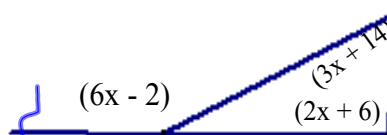
$$(2x - 30) + (3x + 10) + 3x = 180$$

$$8x - 20 = 180$$

$$8x = 200$$

$$x = 25$$

ex8:

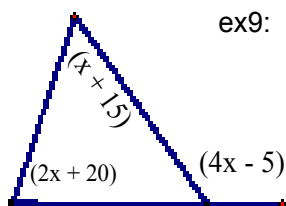


$$(6x - 2) + (3x + 14) + (2x + 6) = 180$$

$$11x + 18 = 180$$

$$11x = 162$$

$$x = 14.72$$



$$4x - 5 = 2x + 20 + x + 15$$

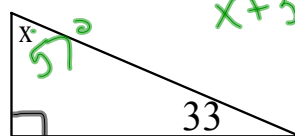
$$4x - 5 = 3x + 35$$

$$-3x$$

$$x - 5 = 35$$

$$x = 40$$

ex10:



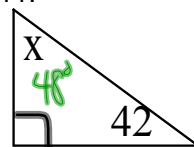
$$x + 33 + 90 = 180$$

$$x + 33 = 90$$


$$OR$$

$$x + 33 = 90$$

ex11:



Corollary--the acute angles of a right triangle are complementary.



HW p182-183
6-14, 18-20

Attachments

Exterior_interactive.gsp